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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,658	02/23/2004	Sang-Jin Park	21C-0093	2674

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EXAMINER	
SCHECHTER, ANDREW M	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 04/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/785,658	PARK ET AL.	
	Examiner	Art Unit	
	Andrew Schechter	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) *12-16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Response to Arguments

2. Applicant's arguments filed 31 January 2006 have been fully considered but they are not persuasive.

Referring to the unamended text of claim 1, the applicant argues that the double patenting rejection of claim 1 in view of claim 32 of Application No. 10/846,043 is incorrect. This is not persuasive, but more importantly it is moot in view of the amendment to claim 1. The claims of 10/846,043 do not anticipate or render obvious the amended claim 1, so the previous double patenting rejection is withdrawn.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3, 5-8, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Wu*, US 2002/0030768 in view of *Moon et al.*, U.S. Patent No. 6,778,238.

Wu discloses [see Figs. 1 and 3, for instance] a display device for displaying images in response to image and control signals, comprising a display surface [302] through which input light is applied from an external object, a color filter [310] having color pixels that are arranged to form a planar surface substantially parallel with the display surface, and a substrate [301] having at least one light sensing portion [306] disposed to face corresponding to the color pixels, the at least one light sensing portion sensing light provided through the corresponding color pixel.

Wu discloses that each pixel has such a light sensing portion [see Fig. 1], but does not disclose that one of the color pixels is red. *Moon* discloses an analogous device in which the color filter has red, green, and blue pixels. It would have been obvious to one of ordinary skill in the art at the time of the invention to have the color filter in *Wu* made up of red, green, and blue color pixels, motivated by the well-known use of these three types of color pixels to create full-color images. Any one of the red color pixels would then have a light sensing portion meeting the language of the last paragraph of claim 1. Claim 1 is therefore unpatentable.

Wu discloses a liquid crystal layer [309] between the color filter and the substrate, so claim 2 is also unpatentable. Red light is provided to the at least one light sensing portion only through the red color pixel, so claim 3 is also unpatentable. The limitation that the input light provided from the external object is white light is a

functional limitation, which would be met when *Wu*'s device is used to image a white object, so claim 5 is also unpatentable [see MPEP 2114, for instance]. Similarly, when the device images an appropriate red object, the input light is red light having a wavelength in a range from about 600nm to about 700nm, so claim 6 is also unpatentable. The substrate further includes a plurality of pixel portions arranged in a matrix form to display images in accordance with the image and control signals, so claim 7 is also unpatentable. The at least one light sensing portion includes multiple light sensing portions each of which is disposed at an area having a selected number of the pixel portions, so claim 8 is also unpatentable. The light sensing portions each have a size smaller than a size of the respective pixel portions, so claim 10 is also unpatentable. The pixel portions each include a gate line [XD], data line [YD], and a first switching member [101] having a conduction path between the data line and a pixel electrode disposed on the substrate, the first switching member being controlled by the gate signal. Claim 11 is therefore unpatentable.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Wu*, US 2002/0030768 in view of *Moon et al.,* U.S. Patent No. 6,778,238, and further in view of *Matsumoto et al.,* U.S. Patent No. 4,097,128.

Wu and *Moon* do not explicitly disclose that the red light (that is, the red light which emerges from the red color filter and is provided to the light sensing portion, when, for instance, white light is incident) has a wavelength range from about 600nm to about 700nm. *Matsumoto* discloses [col. 20, lines 1-2] that this wavelength range produces a distinct red light. It would have been obvious to one of ordinary skill in the

art at the time of the invention to have the red color filter allow this range of wavelengths to pass, motivated by the desire to produce a distinct red light. Claim 4 is therefore unpatentable.

6. Claims 1-3, 7-9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Hack et al.,* U.S. Patent No. 5,204,661 in view of *Moon et al.,* U.S. Patent No. 6,778,238.

Hack discloses [see Fig. 2, for instance] a display device for displaying images in response to image and control signals, comprising, a display surface [inherent] through which input light [col. 11, lines 20-44] is applied from an external object ["light pens", for instance]; a color filter having color pixels that are arranged to form a planar surface substantially parallel with the display surface and a substrate [inherent] having a least one light sensing portion [12] disposed to face corresponding one of the color pixels, the at least one light sensing portion sensing light provided through the color pixel [col. 11, lines 20-44].

Hack does not disclose the color pixels including red, green, and blue color pixels. *Moon* discloses an analogous device in which the color filter has red, green, and blue pixels. It would have been obvious to one of ordinary skill in the art at the time of the invention to have the color filter in *Wu* made up of red, green, and blue color pixels, motivated by the well-known use of these three types of color pixels to create full-color images.

Hack does not explicitly state that the at least one light sensing portion corresponds to a red color pixel. *Hack* teaches that

> "by placing a color filter over individual sensors... it would be possible to selectively sense light of particular wavelengths. By blue filtering a pixel, for instance, the pixel will become relatively insensitive to red light input. This may be valuable in digitizing color images, distinguishing between different "color" light pens in a multi pen system, or other application where color differentiation is important." [col. 11, lines 20-44]

Thus, *Hack* explicitly states the example of a blue color pixel corresponding to the at least one light sensing portion. However, in its use of "for instance", in referring to "different 'color' light pens", and insofar as there are only three primary colors red, green, and blue, this passage also clearly gives explicit fruition to red filtering a pixel. At the very least, it would have been obvious to one of ordinary skill in the art at the time of the invention to red filter a pixel, based on *Hack's* teaching that it would be valuable in digitizing color images, in using a multi-pen system, etc.

Claim 1 is therefore unpatentable.

Regarding claim 2, *Hack* discloses a liquid crystal layer over the substrate [col. 5, lines 50-51] and a color filter [col. 11, line 25], but does not specifically disclose that the liquid crystal is between the color filter and the substrate [that is, the color filter and the substrate could both be on the same side of the liquid crystal rather than as recited]. *Moon* discloses [see Fig. 4, for instance] an analogous LCD with the substrate having the TFT circuitry and the color filter substrate on opposite sides of the liquid crystal. It would have been obvious to one of ordinary skill in the art at the time of the invention to do so in the device of *Hack*, motivated by the manufacturing advantage of being able to produce the substrate with the circuitry and a separate substrate with the color filters, as

is conventionally done in the art, thus allowing use of existing facilities and processes. Claim 2 is therefore unpatentable.

When red-filtering a pixel, red light is provided to the at least one light sensing portion only through the red color pixel, so claim 3 is also unpatentable. The substrate further includes a plurality of pixel portions [see Fig. 2, a pixel portion is each area between the adjacent row and column address lines] arranged in a matrix form to display images in accordance with the image [Ds] and control [An] signals, so claim 7 is also anticipated. The at least one light sensing portion includes multiple light sensing portions each of which is disposed at an area having a selected number of the pixel portions [for instance, 1 or 2 pixel portions, see col. 11, lines 53-55], so claim 8 is also anticipated. The number of light sensing portions can be smaller than a number of pixel portions in a unit area [when they are arranged "in, say, every other cell" then a unit area of 2 pixel portions contains 1 light sensing portion and 2 pixel portions], so claim 9 is also anticipated. There is a gate line [An], a data line [Ds], a first switching member [40] having a conduction path between the data line and a pixel electrode [the electrode on the TFT side of 42], the first switching member being controlled by the gate signal, so claim 11 is also anticipated.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Hack et al.,* U.S. Patent No. 5,204,661 in view of *Moon et al.,* U.S. Patent No. 6,778,238 as applied above, and further in view of *Matsumoto et al.,* U.S. Patent No. 4,097,128.

Hack and *Moon* do not explicitly disclose that the red light has a wavelength range from about 600nm to about 700nm. *Matsumoto* discloses [col. 20, lines 1-2] that

this wavelength range produces a distinct red light. It would have been obvious to one of ordinary skill in the art at the time of the invention to use this range of wavelengths, motivated by the desire to produce a distinct red light. Claim 4 is therefore unpatentable.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Hack et al.,* U.S. Patent No. 5,204,661 in view of *Moon et al.,* U.S. Patent No. 6,778,238 as applied above, and further in view of *Cook,* US 2002/0021291.

Hack in view of *Moon* does not explicitly disclose having the external light be white (a functional limitation as this does not affect the structure of the display device). *Cook* discloses a stylus (light pen) for such an LCD, and discloses that the LED generating the light for this stylus may be white [paragraphs 0028-0030]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use white light, since some of the light would therefore be able to pass through red, green, and blue color filters and reach the respective light sensing portions. Claim 5 is therefore unpatentable.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Hack et al.,* U.S. Patent No. 5,204,661 in view of *Moon et al.,* U.S. Patent No. 6,778,238 as applied above, and further in view of *Matsumoto et al.,* U.S. Patent No. 4,097,128.

Hack discloses that the input light from the external object can be red (for instance, when red filtering in a multi-pen system, as discussed above), but does not explicitly disclose that the red light has a wavelength range from about 600nm to about 700nm. *Matsumoto* discloses [col. 20, lines 1-2] that this wavelength range produces a

distinct red light. It would have been obvious to one of ordinary skill in the art at the time of the invention to use this range of wavelengths, motivated by the desire to produce a distinct red light. Claim 6 is therefore unpatentable.

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Hack et al.,* U.S. Patent No. 5,204,661 in view of *Moon et al.,* U.S. Patent No. 6,778,238 as applied above, and further in view of *Shannon et al.,* U.S. Patent No. 5,485,177.

Hack discloses [see Fig. 2] that the light sensing portions take up only one region of the pixel regions, so they would presumably have a size smaller than the size of the respective pixel portions. It might be argued that Fig. 2 is not a plan view, drawn to scale, so it is conceivable that the light sensing portion actually occupies the entire pixel portion area, and the other circuitry is stacked on a separate layer above or below it. To forestall this argument, the examiner cites *Shannon*, which discloses [see Fig. 4] an analogous pixel portion with light sensing portion taking up only a part of the pixel area and all the circuitry in a single layer, rather than stacked. It would have been obvious to one of ordinary skill in the art at the time of the invention to do so in the device of *Hack*, motivated by the desire to avoid the additional manufacturing steps and complications of stacking such layers of circuitry on top of each other. Claim 10 is therefore unpatentable.

11. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Hack et al.,* U.S. Patent No. 5,204,661 in view of *Moon et al.,* U.S. Patent No. 6,778,238 as applied above, and further in view of *Huang et al.,* U.S. Patent No. 6,099,185.

Hack discloses [col. 11, lines 31-32] having the external object be a light pen, but does not explicitly disclose it having a light emitting diode [LED] to generate the input light. *Huang* discloses a color light pen such as that referred to by *Hack*, in which the light is generated by LED [see abstract]. It would have been obvious to one of ordinary skill in the art at the time of the invention to do so in the device of *Hack*, motivated by the ability of such LED chips to generate the appropriately-colored lights in a small, light-weight pen-holder to facilitate the convenient usage of the light pen. Claim 17 is therefore unpatentable.

Election/Restrictions

12. Claims 12-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Andrew Schechter
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11 April 2006